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( दूसरा पुनरीक्षण )

*Indian Standard*

TOBACCO — SAMPLING OF BATCHES OF RAW  
MATERIAL — GENERAL PRINCIPLES  
( *Second Revision* )

ICS 65.160

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## NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with ISO 4874 : 2000 'Tobacco — Sampling of batches of raw material — General principles' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Tobacco and Tobacco Products Sectional Committee and approval of the Food and Agriculture Division Council.

This standard was first published in 1979 and subsequently revised in 1988. The second revision of this standard is being brought to align it with the latest edition of ISO 4874 : 2000 under dual numbering.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

## *Indian Standard*

# TOBACCO — SAMPLING OF BATCHES OF RAW MATERIAL — GENERAL PRINCIPLES *( Second Revision )*

## 1 Scope

This International Standard specifies the general principles to be applied when sampling batches of raw tobacco in order to assess either

- the mean value of one or more of its characteristics, or
- the heterogeneity of one or more of its characteristics.

**NOTE** If it is necessary to sample tobacco taken from cigarettes, the procedures listed in 5.1 of ISO 8243:1991 should be used. Manufactured tobacco products, including products intended for sale or distribution, are specifically not included in the scope of this International Standard.

This International Standard is applicable to the sampling of batches of raw tobacco of the following types:

- a) leaf tobacco:
  - 1) flue cured,
  - 2) air cured,
  - 3) sun cured,
  - 4) fire cured;
- b) pretreated raw tobacco:
  - 1) which has undergone fermentation (in packages not intended for retail or wholesale sales or distribution, in bulk, in chambers),
  - 2) which has been partially or completely stemmed,
  - 3) which is in the form of stems,
  - 4) which is in the form of waste and remnants,
  - 5) which has been reconstituted in the form of strips.

## 2 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

### 2.1

#### **characteristic**

physical, mechanical, dimensional, chemical, biological, botanical or organoleptic property of tobacco

### 2.2

#### **batch**

definite quantity of tobacco that is produced under conditions that are presumed to be uniform with respect to one or more of its characteristics (for example, leaf position, colour, ripeness, leaf length)

**NOTE** This notion implies generally that the batch consists of tobaccos of the same origin belonging to the same variety.

**2.3**

**consignment**

quantity of tobacco delivered at one time

NOTE The consignment may consist of one or more batches or parts of batches.

**2.4**

**sampling unit**

unit part of the consignment

NOTE 1 It is separately packaged (bale, wooden or cardboard case, basket or sack).

NOTE 2 For bulk tobacco, a consignment with a total mass of  $m$  kg should be considered to be composed of  $m/100$  sampling units.

NOTE 3 The definition of the term "sampling unit" as given in this International Standard is a special case of the general definition given in ISO 3534-2, and it applies only to raw tobacco.

**2.5**

**stratified sampling**

for a population that can be divided into different subpopulations (called strata), sampling carried out in such a way that specified proportions of the sample are drawn from different strata

**2.6**

**increment**

quantity of tobacco taken at one time from a sampling unit in order to form part of a single sample

**2.7**

**single sample**

**basic sample**

sample obtained by combining  $N$  increments taken from a sampling unit so as to be as representative as possible of this unit

**2.8**

**gross sample**

sample that is a combination of all single samples

**2.9**

**reduced sample**

sample that is taken from the gross sample and is representative of the gross sample

**2.10**

**laboratory sample**

sample intended for laboratory inspection or testing and which is representative of the gross sample.

NOTE It may consist of

- a) one or more single samples;
- b) the gross sample;
- c) a reduced sample of the gross sample.

**2.11**

**test sample**

sample as prepared for testing, taken at random from the laboratory sample, representative of the gross sample

### **3 Contractual arrangements**

The contract between the interested parties shall state:

- a) at what stages of production and delivery sampling shall be carried out;
- b) the party or parties responsible for carrying out the sampling and under whose control;
- c) the characteristics to be determined;
- d) the laboratory or laboratories that will perform the analyses;
- e) the maximum interval of time admissible between sampling and analysis. (This interval should be as short as possible.)

### **4 Sampling**

#### **4.1 General**

It is important that the laboratory receive a representative sample which has not been damaged or changed during transport or storage.

#### **4.2 Sampling equipment**

The equipment that is used for sampling the tobacco shall be appropriate for the determination of the characteristics that are specified in clause 3 c). If physical characteristics such as leaf dimensions or particle size distribution are to be determined, then the sampling equipment shall not alter these characteristics. The sampling equipment shall be clean and dry, and shall not affect any subsequent determination.

#### **4.3 Containers for samples and storage precautions**

The containers used for collecting the samples shall be made of a chemically inert material. They shall be airtight and preferably opaque.

The samples shall be kept in a dry and cool place protected against light, and in an odour-free environment to prevent contamination, microbial growth, infestation or other situations which would affect organoleptic properties.

### **5 Procedure**

#### **5.1 General**

The procedure shall include the following steps:

- a) labelling of samples for proper identification;
- b) selection of sampling units;
- c) extraction of increments and constitution of single samples;
- d) constitution of the gross sample;
- e) constitution of reduced samples;
- f) preparation of the laboratory sample(s).

**NOTE** If heterogeneity is of interest as well as mean values, analyses of several laboratory samples will be necessary. In these circumstances, the laboratory samples will usually be taken from a single sample or a gross sample comprising not more than two or three single samples.

## 5.2 Treatment of damaged sampling units

The treatment of damaged sampling units depends on the aim of the analyses.

- a) If the damage to the tobacco is irrelevant with respect to the characteristics to be determined (for example, disease markings when assessing the length of the leaf), sample damaged units in the same way as undamaged units.
- b) If the assessment may be affected by the damage, the damaged sampling units shall be sampled separately and a record made.
- c) If the damage to the tobacco is such that the tobacco is unusable for the assessment of the characteristics to be determined, do not sample that sampling unit.

It may be necessary to grade the damage to the tobacco in the damaged sampling units into several classes and obtain sufficient increments from the damaged sampling units.

## 5.3 Selection of sampling units

The selection of sampling units may be carried out by random sampling or by periodic systematic sampling.

The choice of the method to be employed depends on the nature of the consignment. If the batches in the consignment are not identified, random selection of the sampling units is recommended. If the batches in the consignment are marked with successive numbers indicating a production order, then periodic sampling to select sampling units may be suitable.

### a) Selecting the sampling units at random

Draw the sampling units at random from the consignment in such a manner that each unit has the same probability of being selected. Repeat this process until the required number ( $n$ ) of sampling units has been drawn.

### b) Selecting the sampling units by periodic systematic sampling

If there are  $N$  sampling units in the consignment and these sampling units have been identified on a systematic basis (for example, the order of production) and numbered from 1 to  $N$ , a periodic systematic sampling of  $n$  sampling units consists in the taking of  $n$  units:

$$h, h + k, h + 2k, \dots, h + (n - 1)k$$

where  $h$  and  $k$  are whole numbers satisfying the relationships

$$nk \leq N < n(k + 1) \text{ and } h \leq k$$

with  $h$  being generally taken at random from the first  $k$  whole numbers.

## 5.4 Extraction of increments and constitution of single samples

### 5.4.1 Composition

The minimum increment shall be constituted in accordance with one of the following specifications, according to the circumstances:

- a) three packets of leaves tied together (hands);
- b) fifty leaves (for leaves not tied together before delivery);
- c) 500 g of tobacco (oriental tobacco, threshed or completely stemmed tobacco, stems, remnants, or reconstituted tobacco).

#### 5.4.2 Number of increments

At least three increments shall be taken from each sampling unit. If only three increments are taken, the first of them should be taken from the upper third of the sampling unit, the second from the middle third, and the third from the lower third. Take the increments in such a way that no sites of removal are centred on the same vertical line through the unit.

If more than three increments are taken, they should be evenly distributed in the sampling unit.

#### 5.4.3 Size of single samples

Each single sample is composed of all increments taken from the same unit.

The size and composition of the samples shall be appropriate to

- a) the type of tobacco,
- b) the size of the sampling unit, and
- c) the type and number of determinations to be carried out.

NOTE Examples of typical sample sizes are given in annex A.

#### 5.4.4 Tobacco in bulk

Tobacco in bulk shall be notionally divided into sampling units as indicated in Note 2 in 2.4. These notional units shall be sampled as specified in 5.4.1 to 5.4.3.

In this case, it is also necessary to draw up a stratified sampling plan appropriate to the dimensions of the bulk sample.

### 6 Sampling report

The sampling report shall contain the following information:

- a) the type and origin of the tobacco;
- b) the consignment number as well as any batch number or numbers;
- c) the total mass of the batch;
- d) the method of packing;
- e) the number of packages and their unit mass, and whether the mass is net or gross;
- f) the number of damaged packages and their unit mass, and whether the mass is net or gross;
- g) the appearance of the tobacco;
- h) the purpose of the sampling and the characteristics to be determined;
- i) the number of units sampled;
- j) the number, nature and original position of the increments;
- k) the description of the single samples (kind, consistency, unit mass);
- l) the number of single samples;
- m) if applicable, the composition of the gross sample and its mass;
- n) if applicable, the method of reducing the gross sample as well as the composition of the reduced sample and its mass;

- c) the composition and the mass of the laboratory sample(s) and the method by which they have been obtained and conserved;
- p) the names and signatures of the party/parties who carried out the sampling;
- q) date of sampling.

## **Annex A** (informative)

### **Examples of sampling**

#### **A.1 Tobacco in hands**

A consignment of 100 t in 200 kg bales (for a total of 500 bales).

Number of units sampled: 15 bales.

Single sample: 9 hands (minimum).

Gross sample: 135 hands (minimum).

#### **A.2 Threshed tobacco**

A consignment of 10 t in 500 kg hogsheads (for a total of 20 hogsheads).

Number of units sampled: 4 hogsheads.

Single sample: 1,5 kg (minimum).

Gross sample: 6 kg (minimum).

## Bibliography

- [1] ISO 3534-1, *Statistics — Vocabulary and symbols — Part 1: Probability and general statistical terms.*
- [2] ISO 3534-2, *Statistics — Vocabulary and symbols — Part 2: Statistical quality control.*
- [3] ISO 8243:1991, *Cigarettes — Sampling.*

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